

ken

Article

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Ken Thompson Special Issue

Contributions:

D. Ritchie:
Ken, Unix and Games

J. Schaeffer:
Ken Thompson's Influence on
Computer Games Research

H.J. van den Herik:
The Bell Captain

E.A. Heinz:
Self-play, Deep Search and Diminishing Returns

F.-H. Hsu:
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J. Tamplin and G.McC. Haworth:
Ken Thompson's 6-Man Tables

L.B. Stiller:
Retrograde Analysis: Software Architecture

H.M.J.F. van der Heijden:
Endgame Tables and Endgame Study Composition

N.D. Elkies:
Endgame Tables and Chess Composition

J.D. Beasley:
Computer Discoveries in Losing Chess

V. Kotěšovec:
King and Two Generalised Knights against King

SOME INFORMATION ABOUT THE INTERNATIONAL COMPUTER CHESS ASSOCIATION (ICCA)

The ICCA was founded in 1977 and represents the Computer Chess World vis-à-vis Computer Science Organizations, such as ACM and IFIP, and also vis-à-vis the International Chess Federation (FIDE).

World-wide membership is over 500 and comprises individuals as well as university and industrial members.

The ICCA takes pride in listing the roster of its Past Presidents:

1977 - 1983	Benjamin Mittman
1983 - 1986	Monroe Newborn
1986 - 1992	David Levy
1992 - 1999	Tony Marsland

The activities of the ICCA are:

- (i) to publish a quarterly ICGA Journal;
- (ii) to hold a triennial World Computer-Chess Championship;
- (iii) to strengthen ties and promote cooperation among computer-games researchers;
- (iv) to introduce computer games to the games world;
- (v) to support national computer-games organizations and computer-games tournament organizers.

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From the beginning, the world of game-playing by machine has been fortunate in attracting contributions from the leading names of computer science. Charles Babbage, Konrad Zuse, Claude Shannon, Alan Turing, John von Neumann, John McCarthy, Alan Newell, Herb Simon and Ken Thompson all come to mind, and each reader will wish to add to this list. Recently, the Journal has saluted both Claude Shannon and Herb Simon.

Ken's retirement from Lucent Technologies' Bell Labs to the start-up Entrisphere is also a good moment for reflection. He is principally known as the father of UNIX and has been the recipient of some six prestigious awards including two IEEE awards, the ACM Turing Award and the National Medal of Technology of the USA. He was also awarded the first Fredkin prize in 1983 when BELLE, ACM and World CC Champion, won the title of U.S. Chess Master. The endgame CDs earned an ICCA Award, and here, the ICCA thanks Ken for his significant and enduring contributions to our community by revisiting some of the themes he developed.

UNIX and C developed in symbiosis and Dennis Ritchie, father of C, leads off by giving us his view from the next desk at Bell. He recreates the special culture of the research community there, simultaneously both liberal and productive, illustrating the sometimes surprising connections between Ken's games-related and other work. Jonathan Schaeffer reviews Ken's three principal contributions to computer game-playing, and Jaap Van den Herik mentions other activities and achievements: ICCA administration, event participation and success, opening-book preparation, intelligent computer vision and player-rating systems.

Ernst Heinz surveys the research inspired by and/or closely related to Ken's pioneering self-play experiments. He announces the results of his own most comprehensive investigation. It appears that statements about the decreasing returns of increasing search may soon be made with high levels of statistical confidence.

Feng-Hsiung Hsu's personal memories relive the innovative history that began with Joe Condon and Ken's BELLE, the first deployment of chess-specific hardware and parallelism, and developed through CHIPTEST, DEEP THOUGHT I and II, DEEP BLUE I and the deeper, match-winning DEEP BLUE II.

John Tamplin and Guy Haworth summarise the headline data on Ken's most recent retrograde analysis of 6-man chess endgames. This work incidentally includes and underwrites without exception the 1990s 6-man work of Lewis Stiller, who, in turn, throws some light on the measures needed to produce those results. The contributions by Harold van der Heijden and Noam Elkies demonstrate how the considerable tranche of perfect endgame knowledge created by Ken and others has contributed and will contribute to the world of chess composition, not only in technical but also in artistic terms.

John Beasley introduces us to the strange, upside-down Lewis Carroll world of *Qui Perde Gagne* or *Losing Chess* – same men, modified rules, different objective. He illustrates how retrograde analysis can highlight remarkable phenomena in a domain where human experience and intuition is relatively undeveloped. Václav Kotěšovec in contrast retains the rules and objective of conventional chess while modifying men and board for a thorough examination of the power of two 'Generalised Knights' or Leapers.

The contributions in this issue only partly demonstrate how Ken has quietly encouraged and helped many people behind the scenes across a wide range of topics, usually with his signature lowercase emails pared to the bone. The anecdotes which have reached the editorial desk attest to this as well as to a sense of enjoying life to the full – the many competitions, the demonstration games, the CD-ROMs, the flights to and fro across America, the landings, and the MiG-29 adventure in Russia.

Ken now enjoys new challenges at Entrisphere and the freedom of the skies as a full-time flying-instructor. May he continue to inspire us and his colleagues in our respective fields.

Guy Haworth and Ernst Heinz



Ken and some more leading-edge hardware